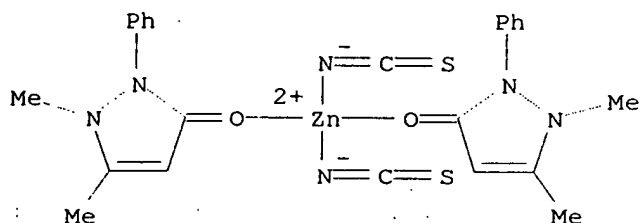
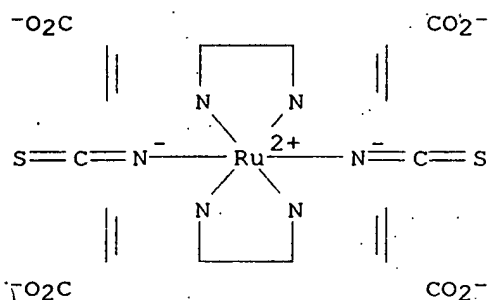


IT Chemically resistant materials
 (plasticizer-resistant; thermal printing material contg. leuco dye,
 zinc thiocyanate antipyrine complex as developer, and aluminum
 -contg. salt)
 IT Solvent-resistant materials
 Thermal printing
 (thermal printing material contg. leuco dye, zinc thiocyanate
 antipyrine complex as developer, and aluminum-contg. salt)
 IT 10043-01-3, Aluminum sulfate 57292-32-7, Aluminum
 sulfate hydrate
 RL: MOA (Modifier or additive use); USES (Uses)
 (thermal printing material contg. leuco dye, zinc thiocyanate
 antipyrine complex as developer, and aluminum-contg. salt)
 IT 20002-47-5 125864-21-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (thermal printing material contg. leuco dye, zinc thiocyanate
 antipyrine complex as developer, and aluminum-contg. salt)
 IT 20002-47-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (thermal printing material contg. leuco dye, zinc thiocyanate
 antipyrine complex as developer, and aluminum-contg. salt)
 RN 20002-47-5 HCAPLUS
 CN Zinc, -bis(1,2-dihydro-1,5-dimethyl-2-phenyl-3H-pyrazol-3-one-
 .kappa.O3)bis(thiocyanato-.kappa.N)-, (T-4)- (9CI) (CA INDEX NAME)



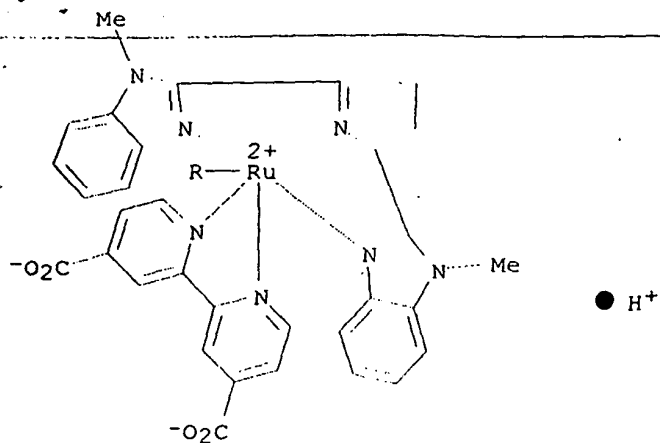
L12 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2000 ACS
 AN 1996:83129 HCAPLUS
 DN 124:160011
 TI Electron transport properties in dye-sensitized
 nanocrystalline/nanostructured titanium dioxide films
 AU Lindstroem, Henrik; Rensmo, Haakan; Soederberg, Sven; Solbrand, Anita;
 Lindquist, Sten-Eric
 CS Department of Physical Chemistry, University of Uppsala, Uppsala, S-75121,
 Swed.
 SO J. Phys. Chem. (1996), 100(8), 3084-8
 CODEN: JPCHAX; ISSN: 0022-3654
 DT Journal
 LA English
 CC 74-1 (Radiation Chemistry, Photochemistry,
 and Photographic and Other Reprographic
 Processes).
 AB Spectral response measurements have been performed on dye-sensitized
 nanocryst. TiO2 photoelectrodes. The effects of film thickness, electron
 scavengers in the electrolyte, and surface treatment of the nanocryst.
 film were studied by means of action spectra for front- and back-side
 illumination. Our results show that electron acceptors such as
 dioxygen and iodine strongly decrease the IPCE. Surface treatment of the
 electrode with pyridine induces a substantial increase of the photocurrent
 yields. The observations are discussed in terms of kinetics at the
 semiconductor-electrolyte interface. IPCE values for sandwich cells were
 generally much higher than those obtained from three-electrode
 measurements.
 IT electron transport dye sensitized titanium dioxide
 IT Electron, conduction
 (transport properties in dye-sensitized nanocryst./nanostructured

titanium dioxide photoelectrodes)
 IT Electrodes
 (photoelectrochem., electron transport properties in dye-sensitized
 nanocryst./nanostructured titanium dioxide)
 IT 13463-67-7, Titanium dioxide, properties
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (electron transport properties in dye-sensitized
 nanocryst./nanostructured photoelectrodes of)
 IT 141460-19-7
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (electron transport properties in nanocryst./nanostructured titanium
 dioxide photoelectrodes sensitized by)
 IT 141460-19-7
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (electron transport properties in nanocryst./nanostructured titanium
 dioxide photoelectrodes sensitized by)
 RN 141460-19-7 HCAPLUS
 CN Ruthenate(4-), bis[[2,2'-bipyridine]-4,4'-dicarboxylato(2-)-
 .kappa.N1,.kappa.N1']bis(thiocyanato-.kappa.N)-, tetrahydrogen, (OC-6-21)-
 .(9CI)- (CA-INDEX-NAME)



● 4 H⁺

L12 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2000 ACS
 AN 1995:205779 HCAPLUS
 DN 122:251785
 TI Enhanced Spectral Sensitivity from Ruthenium(II) Polypyridyl Based
 Photovoltaic Devices
 AU Argazzi, Robert; Bignozzi, Carlo A.; Heimer, Todd A.; Castellano, Felix
 N.; Meyer, Gerald J.
 CS Centro di Studio su Fotoreattività e Catalisi, CNR, Ferrara, 44100, Italy
 SO Inorg. Chem. (1994), 33(25), 5741-9
 CODEN: INOCAJ; ISSN: 0020-1669
 DT Journal
 LA English
 CC 74-1 (Radiation Chemistry, Photochemistry,
 and Photographic and Other Reprographic
 Processes)
 Section cross-reference(s): 52, 78
 AB Ruthenium polypyridyl compds., cis-[4,4'-(CO₂H)₂-2,2'-bipyridine]2Ru(X)₂
 and cis-[5,5'-(CO₂H)₂-2,2'-bipyridine]2Ru(X)₂ where X = Cl⁻, CN⁻, and
 SCN⁻, have been prepd. spectroscopically characterized, and anchored to
 high surface area TiO₂ electrodes for the conversion of visible light into
 electricity. Vibrational studies reveal a surface ester linkage and
 indicate that the sensitizers bind to TiO₂ through a distribution of
 interfacial interactions in a similar manner. When operating in a
 photoelectrochem. cell, these materials convert visible photons into



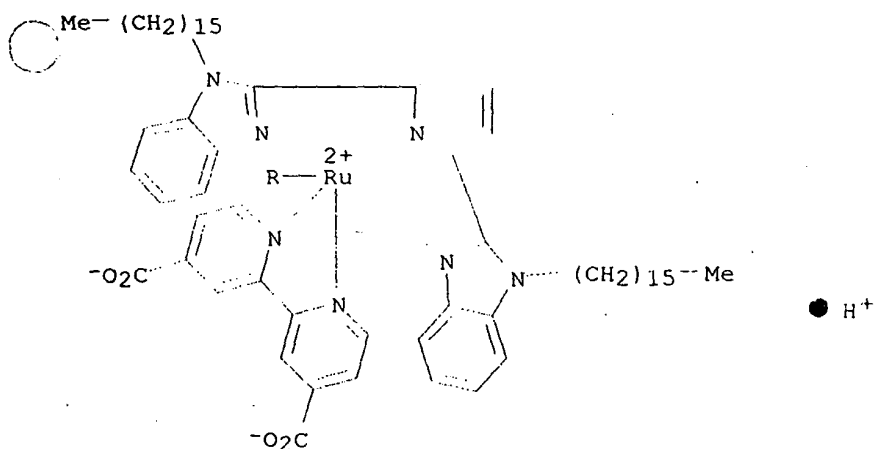
R⁺ N⁺ C⁺ S

IT 201335-46-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prepn., absorption and luminescence spectra, resonance
Raman, and redox potentials of)

RN 201335-46-8 HCAPLUS

CN Ruthenate(1-), [[2,2'-bipyridine]-4,4'-dicarboxylato(2-)-
.kappa.N1,.kappa.N1'] [2,2'-(2,6-pyridinediyl-.kappa.N)bis[1-hexadecyl-1H-
benzimidazole-.kappa.N3]] (thiocyanato-.kappa.N)-, hydrogen, (OC-6-13)-
(9CI) (CA INDEX NAME)



R⁺ N⁺ C⁺ S

L7 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2000 ACS

AN 1997:72240 HCAPLUS

DN 126:165714

TI Structure of Nanocrystalline TiO₂ Powders and Precursor to Their Highly
Efficient Photosensitizer

AU Hermann, R.; Graetzel, M.; Nissen, H.-U.; Shklover, V.; Nazeeruddin,
M.-K.; Zakeeruddin, S. M.; Barbe, C.; Kay, A.; Haibach, T.; Steurer, W.

CS Laboratory of Crystallography and Laboratory for Electron Microscopy I,
Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.

Section cross-reference(s): 74, 75, 76

AB SEM, high-resoln. TEM (HRTEM), and powder XRD studies on nanocryst. TiO₂ powders and thin films are presented. The size, shape (mostly exposed faces), and ordering of the TiO₂ anatase particles in the nanocryst. films are discussed. The use of the topochem. approach, which considers the properties of (nanocryst.) solids in terms of crystallog. features of (nano)crystals is suggested. The surface area of sensitizer [bis(4,4'-dicarboxy-2,2'-bipyridine)bis(thiocyanato)]ruthenium (II) [abbreviated as cis-Ru(dcbpy)₂(NCS)₂] on the semiconductor surface for the different types of anchoring is estd. from single-crystal x-ray diffraction studies of the esterified form of the complex.

ST titanium dioxide nanocryst powder film structure; crystal structure
ruthenium dicarboxybipyridine thiocyanato; ruthenium dicarboxybipyridine thiocyanato prepn titania surface; photosensitizer
ruthenium dicarboxybipyridine thiocyanato titania surface; topochem titania nanoparticle ruthenium complex photosensitizer

IT Surface area
(of bis(dicarboxybipyridine)bis(thiocyanato)ruthenium sensitizer on nanocryst. TiO₂ via different anchoring types)

IT Luminescence
(of ruthenium dicarboxybipyridine thiocyanato)

IT Crystal structure
Molecular structure
(of ruthenium dicarboxybipyridine thiocyanato complex)

IT Nanocrystals
(structure of nanocryst. TiO₂ powders and precursor to their highly efficient photosensitizer)

IT 141460-19-7D, anchored on nanocryst. titanium dioxide surface
186888-32-4D, anchored on nanocryst. titanium dioxide surface
RL: PRP (Properties)
(estd. surface area as sensitizer)

IT 1134-35-6, 4,4'-Dimethyl-2,2'-bipyridine
RL: RCT (Reactant)
(for prepn. of ruthenium dicarboxybipyridine thiocyanato photosensitizer)

IT 1762-42-1P, 4,4'-Bis(ethoxycarbonyl)-2,2'-bipyridine 6813-38-3P,
4,4'-Dicarboxy-2,2'-bipyridine 109835-97-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(for prepn. of ruthenium dicarboxybipyridine thiocyanato photosensitizer)

IT 186888-33-5P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prepn. and crystal structure of, as model for anchoring as sensitizer on nanocryst. TiO₂ surface)

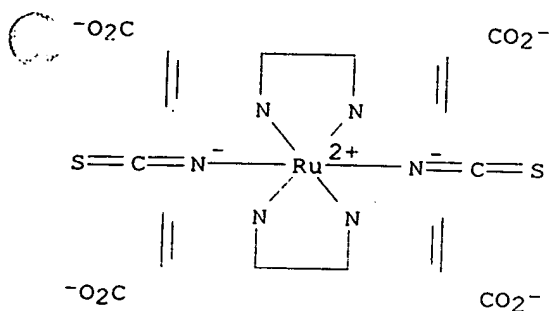
IT 141460-19-7P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prepn., luminescence, and model for anchoring as sensitizer on nanocryst. TiO₂ surface)

IT 186888-32-4P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(prepn., mol. structure, hydrolysis, luminescence, and model for anchoring as sensitizer on nanocryst. TiO₂ surface)

IT 13463-67-7P, Titanium dioxide, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(structure of nanocryst. TiO₂ powders and precursor to their highly efficient photosensitizer)

IT 141460-19-7P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prepn., luminescence, and model for anchoring as sensitizer on nanocryst. TiO₂ surface)

RN 141460-19-7 HCAPLUS
 CN Ruthenate(4-), bis[(2,2'-bipyridine)-4,4'-dicarboxylato(2-)-
 .kappa.N1,.kappa.N1']bis(thiocyanato-.kappa.N)-, tetrahydrogen, (OC-6-21)-
 (9CI) (CA INDEX NAME)



● 4 H⁺

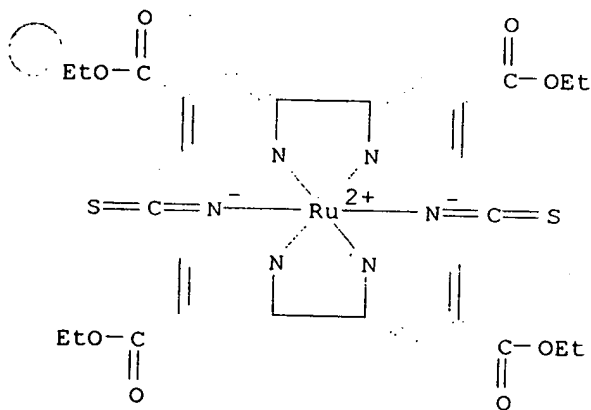
IT 186888-32-4P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)

(prepn., mol. structure, hydrolysis, luminescence, and model for anchoring as sensitizer on nanocryst. TiO₂ surface)

RN 186888-32-4 HCAPLUS

CN Ruthenium, bis(diethyl [2,2'-bipyridine]-4,4'-dicarboxylate-.kappa.N1,.kappa.N1')bis(thiocyanato-.kappa.N)-, (OC-6-21)- (9CI) (CA INDEX NAME)



L7 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2000 ACS

AN 1996:417998 HCAPLUS

DN 125:81284

TI Long lifetime anisotropy (polarization) probes for clinical chemistry, immunoassays, affinity assays and biomedical research

IN Lakowicz, Joseph R.; Szmecinski, Henryk; Terpetschnig, Ewald

PA USA

SO PCT Int. Appl., 68 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G01N033-53

ICS G01N033-58; G01N033-60

CC 9-10 (Biochemical Methods)